FORM PTO 1390
(REV 5-93) US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. §371

ATTORNEY DOCKET NUMBER
2001_1126A

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)
NEW 09/914135

International Application No.	**International Filing Date**	**Priority Date Claimed**
PCT/JP00/00962	February 21, 2000	February 25, 1999

Title of Invention
AUDIO OUTPUT CONTROL DEVICE

Applicant(s) For DO/EO/US
Toshiyuki HAGIHARA; Koji SAKURAI; and Minoru KINOSHITA

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. §371.

2. [] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. §371.

3. [X] This express request to begin national examination procedures (35 U.S.C. §371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. §371(b) and PCT Articles 22 and 39(1).

4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. §371(c)(2))
   a. [] is transmitted herewith (required only if not transmitted by the International Bureau).
   b. [X] has been transmitted by the International Bureau. **Attachment "A"**
   c. [] is not required, as the application was filed in the United States Receiving Office (RO/US)

6. [X] A translation of the International Application into English (35 U.S.C. §371(c)(2)). **Attachment "B"**

7. [] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. §371(c)(3)).
   a. [] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [] have been transmitted by the International Bureau.
   c. [] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [] have not been made and will not be made.

8. [] A translation of the amendments to the claims under PCT Article 19.

9. [] An oath or declaration of the inventor(s) (35 U.S.C. §371(c)(4)).

10. [] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. §371(c)(5)).

Items 11. to 14. below concern other document(s) or information included:

11. [X] An Information Disclosure Statement under 37 CFR 1.97 and 1.98. **Attachment "D"**

12. [] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment. **Attachment "E"**

    [] A SECOND or SUBSEQUENT preliminary amendment.

14. [X] Other items or information:

    -- Cover Letter for Application Filed Without Executed Declaration along w/Unexecuted Declaration - **Attachment "C"**

    -- Form PCT/IB/304 - **Attachment "F"**

U.S. APPLICATION NO. (If known, see 37 CFR 1.5) NEW 09/914135	INTERNATIONAL APPLICATION NO. PCT/JP00/00962	ATTORNEY'S DOCKET NO. 2001_1126A

15. [X] The following fees are submitted	CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):		
Neither international preliminary examination fee nor international search fee paid to USPTO and International Search Report not prepared by the EPO or JPO $1000.00		
International Search Report has been prepared by the EPO or JPO ..... $ 860.00		
International preliminary examination fee not paid ot USPTO but international search paid to USPTO ..... $ 710.00		
International preliminary examination fee paid to USPTO but claims did not satisfy provisions of PCT Article 33(1)-(4) ..... $ 690.00		
International preliminary examination fee paid ot USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... $ 100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$860.00	
Surcharge of $130.00 for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$	

Claims	Number Filed	Number Extra	Rate		
Total Claims	11 -20 =	--0--	X $18.00	$	
Independent Claims	1 - 3 =	--0--	X $80.00	$	
Multiple dependent claim(s) (if applicable)			+ $270.00	$	
TOTAL OF ABOVE CALCULATIONS =				$860.00	
[] Small Entity Status is hereby asserted. Above fees are reduced by 1/2.				$	
SUBTOTAL =				$860.00	
Processing fee of $130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$	
TOTAL NATIONAL FEE =				$860.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40 per property +				$	
TOTAL FEES ENCLOSED =				$860.00	
				Amount to be refunded	$
				Amount to be charged	$

a. [X] A check in the amount of $860.00 to cover the above fees is enclosed. A duplicate copy of this form is enclosed.

b. [] Please charge my Deposit Account No. 23-0975 in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-0975.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

19. CORRESPONDENCE ADDRESS

000513

PATENT TRADEMARK OFFICE

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August 23, 2001

[CHECK NO. 46112]

[2001_1126A]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	
Toshiyuki HAGIHARA et al.	:	**Attn: BOX PCT**
Serial No. NEW	:	**Docket No. 2001_1126A**
Filed August 23, 2001	:	
AUDIO OUTPUT CONTROL DEVICE **[Corresponding to PCT/JP00/00962 Filed February 21, 2000]**		THE COMMISSIONER IS AUTHORIZED TO CHARGE ANY DEFICIENCY IN THE FEE FOR THIS PAPER TO DEPOSIT ACCOUNT NO. 23-0975.

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

Prior to initial examination of the above-identified new PCT application, kindly amend the application as follows:

IN THE CLAIMS:

Kindly cancel claims 1-11 without prejudice or disclaimer thereof.

Kindly add the following new claims 12-22 :

12.(NEW) An audio output control device comprising digital audio signal reproduction means for reproducing digital audio signals recorded on a tape, analog audio signal reproduction means for reproducing analog audio signals recorded on said tape, and audio output switching means for switching between output signal of said digital audio

ATTACHMENT E

signal reproduction means and output signal of said analog audio signal reproduction means, wherein, when said tape is being driven at a normal playback speed, said audio output switching means is switched so that output signal of said digital audio signal reproduction means is put out, and at a certain speed exceeding the normal playback speed of said tape, output signal of said analog signal reproduction means is put out.

13.(NEW) The audio output control device of claim 12 further comprising a microcomputer, wherein said microcomputer controls said audio output switching means.

14.(NEW) The audio output control device of claim 12, wherein control of said audio output switching means is performed by a circuit structure other than a microcomputer.

15.(NEW) The audio output control device of claim 12, wherein said audio output switching means performs switching by inputting output signals of said digital audio signal reproduction means and output signals of said analog audio signal reproduction means, mixing both of them, and continuously and gradually changing the mixing ratio thereof.

16.(NEW) The audio output control device of claim 12, wherein switching control of said audio output switching means from output signal of said digital audio signal

reproduction means to output signal of said analog audio signal reproduction means is performed based on VTR tape speed information.

17.(NEW) The audio output control device of claim 12, wherein switching control of said audio output switching means from output signal of said digital audio signal reproduction means to output signal of said analog audio signal reproduction means is performed based on digital audio signal reproduction error information.

18.(NEW) The audio output control device of claim 12, wherein a delay circuit is provided between said analog audio signal reproduction means and said audio output switching means, and the delay time of said delay circuit is controlled based on VTR tape speed information.

19.(NEW) The audio output control device of claim 16, wherein said tape speed information is obtained from a time code reproduced from tape or from a servo control circuit.

20.(NEW) The audio output control device of claim 17, wherein said tape speed information is obtained from a time code reproduced from tape or from a servo control circuit.

21.(NEW) The audio output control device of claim 18, wherein said tape speed information is obtained from a time code reproduced from tape or from a servo control circuit.

22.(NEW) The audio output control device of claim 17, wherein said reproduction error information is that the number of syncs per frame is equal to or less than a predetermined value, or existence of an error flag.

REMARKS

The present Preliminary Amendment is submitted to delete the original claims 1-11 and add new claims 12-22 in order to incorporate the Article 34 amendments made in the international application.

Copies of the amended portion of the claims with changes marked therein is attached and entitled "*Version with Markings to Show Changes Made.*"

Respectfully submitted,

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August 23, 2001

7/pyts

P22175

SPECIFICATION

Audio Output Control Device

Technical Field of the Invention:

The present invention relates to an audio output control circuit of a video tape recorder (VTR) for reproducing a digital audio signal, in particular to an audio output control device wherein an audio signal can be monitored even during high-speed playback when searching recorded content of a helical scan type digital video tape recorder.

Background of the Technology:

Previously, when playing back recorded contents of a digital video tape recorder at a high speed for the purpose of searching and the like, there was a limitation in the reproduction of digital audio signals. For example, when a tape is being played back at a speed higher than a certain value, digital audio signals cannot be reproduced as a large noise is generated. Similarly, even within a speed range in which a digital audio signal can be reproduced, when an uncorrectable error has occurred during playback at a location of damage and the like of the tape, digital audio signals cannot be reproduced.

Fig. 5 is a block diagram of an existing audio output control device, where a digital audio reproduction circuit 2 is supplied with a digital audio reproduction signal from a helical-scan head (not shown), and produces an audio signal 102 after decoding it. In the event an error has occurred during reproduction, error information 103 is supplied to a microcomputer 4. A servo control circuit 5, originally for controlling tape transport system (not shown), detects tape speed in the tape transport system and provides tape speed information 105 to the microcomputer 4. The microcomputer 4 controls

ATTACHMENT B

on/off of a mute circuit 6 by putting out a control signal 104 to the mute circuit 6 depending on the tape speed information 105 from the servo control circuit 5. The mute circuit 6 in an audio output stage is so structured that it receives the audio signal 102 and controls on/off of the audio signal 102 depending on a control signal 104 from the microcomputer 4.

Fig. 6 is a flow chart illustrating microprocessor control of the mute circuit in the audio output stage. A description of existing technology will now be given below referring to Fig. 5 and Fig. 6.

Reproduced digital audio signals can only be reproduced at or below N times the tape speed (N being 1 to 2 depending on the system) at which noiseless reproduction is possible. Therefore, by monitoring the tape speed information 105 from the servo control circuit 5 with the microcomputer 4, when the tape speed in step S61 in Fig. 6 is N times the normal tape speed or higher, it is necessary to mute a mute circuit 6 with a control signal 104 in step S63 in order to prevent noise generation in the output stage. Also, in the event an uncorrectable error has occurred during digital audio reproduction, too, due to tape damage and the like, as it is necessary to detect in step S62 and mute at step S63, it is necessary for the microcomputer 4 to monitor error information 103 from the digital audio reproduction circuit 2 and mute the mute circuit 6 with a control signal 104 in the output stage when an error is detected.

Disclosure of the Invention:

The above-described existing technology suffered from difficulty of being unable to monitor reproduced audio signals during, for example, cue review for searching recorded contents over the entire tape speed as there is limitation in the playback speed when reproducing digital audio.

It is an object of the present invention to provide an audio output control device that enables monitoring of audio signals under

whatever reproduction condition of digital audio.

In order to address the above difficulty, the audio output control device of the present invention comprises means for reproducing digital audio, means for reproducing analog audio, and audio output switching means for switching between the digital audio reproduction signal and the analog audio reproduction signal. In this structure, the audio output switching means may be configured to be controllable by a microcomputer, or a dedicated circuit having a like function, if not a microcomputer.

In the above structure, an effect of being able to monitor reproduced audio signals is obtained by switching to analog audio reproduction signal even during high-speed playback where digital audio signals cannot be reproduced or when there are many noises due to many errors caused by tape damage and the like.

Also, the audio output switching means may be structured in a manner such that it performs switching by receiving both the output signal of the digital audio reproduction means and the output signal of the analog audio signal reproduction means, mixing them, and continuously and gradually changing the mixing ratio.

With this structure, switching may be performed in a smooth and natural manner.

Also, the switching of the audio output switching means may be performed based on VTR tape speed information, where the tape speed information may be obtained from the servo control circuit or by calculation of time code that carries tape position information. With this, a situation may be prevented in which normal reproduction cannot be made because the tape speed is beyond a predetermined value thus generating noises.

The switching may also be performed based on reproduction error information of digital audio signals, in which case noise generation may be prevented in the event of some damage in the tape. The error information may be that the number of syncs per frame is smaller than

a predetermined value or existence of an error flag.

Another embodiment of the present invention includes in its basic structure a delay circuit between the analog audio signal reproduction means and the audio output switching means for delaying the analog audio signals, where delay time of the delay circuit is controllable based on VTR tape speed information.

With this structure, an effect of preventing discontinuity of reproduced sound during switching due to delay of digital signals from analog signals caused by encoding and decoding may be prevented.

Brief Description of the Drawings:

Fig. 1 is a block diagram of an audio output control device in a first or second exemplary embodiment of the present invention. Fig. 2 (a) and (b) are flow charts showing processing inside a microcomputer in the first exemplary embodiment of the present invention. Fig. 3 is a block diagram of a key part of a digital audio reproduction circuit in the second exemplary embodiment of the present invention. Fig. 4 is a block diagram of a digital audio output control circuit in a third exemplary embodiment of the present invention. Fig. 5 is a block diagram of an existing audio output control device. Fig. 6 is a flow chart showing existing internal processing of a microcomputer.

Description of the Preferred Embodiments:

Exemplary Embodiment 1:

Referring to Figs. 1 and 2, a description will be given below on a first exemplary embodiment of the present invention. Fig. 1 is a block diagram showing an audio output control device of the present invention. In Fig. 1, the point of difference from the existing example of Fig. 5 is that an analog audio reproduction signal 101 put out from an analog audio reproduction circuit 1 that processes signals reproduced from a linear track along the longitudinal

direction of a tape and a digital audio reproduction signal 102 put out from a digital audio reproduction circuit 2 are switchable by an audio output switching circuit 3 by the control of a control signal 104 from a microcomputer 4. As the switching condition of the audio output switching circuit 3 by the control signal 104, either error information 103 from the digital audio reproduction circuit 2 or tape speed information 105 from a servo control circuit is available.

Fig. 2 is a flow chart showing control process of the audio output switching circuit 3 by the microcomputer 4.

A description of operation of the present exemplary embodiment will now be given referring to Figs. 1 and 2. Reproduced signals of digital audio are processed by the digital audio reproduction circuit 2 and the output 102 is supplied to the audio output switching circuit 3. Similarly, reproduced signals of analog audio are processed by the analog audio reproduction circuit 1 and the output 101 is supplied to the audio output switching circuit 3. Here, as there is generally a limit in the speed range in which digital audio can be reproduced without noise, under a condition in which digital audio cannot be reproduced, by switching the audio output signal of the audio output control circuit to analog audio reproduction output, monitoring of audio reproduction signals is enabled even when digital audio cannot be reproduced. For example, as digital audio cannot be reproduced when the tape speed is high, tape speed information 105 from the servo control circuit 5 is monitored by the microcomputer 4. In step S21 in Fig. 2, when the tape speed is N times the speed at which digital audio can be reproduced or higher, in step S24 the audio output switching circuit 3 is switched to analog audio reproduction signal with a control signal 104 from the microcomputer 4. Also, in step S22, when some error has occurred in the digital audio reproduction signal thus disabling reproduction, by monitoring error information 103 from the digital audio reproduction circuit 2 with the microcomputer 4 irrespective of the tape speed, the audio

output switching circuit 3 is switched in a similar fashion from the digital audio reproduction signal to analog audio reproduction signal with a control signal 104 from the microcomputer 4. If the result of steps S21, S22 is no , analog audio is selected in step S24. Even when the tape speed is equal to or greater than N times the normal speed, there is no need for switching so far as there is no error. Or, even when the tape speed is equal to or lower than N times the normal speed, switching may be made if an error has occurred. In this way, monitoring of audio reproduction signals is enabled under any condition by switching to analog audio output, even in a situation where digital audio reproduction signal cannot be reproduced.

In the above description, a description was made on use of a microcomputer 4 by way of an example in controlling the control signal 104 of the audio output switching circuit 3. However, the same purpose may be achieved by using a circuit structure having the same function as the above-mentioned microcomputer 4.

Also, though a description was made on obtaining tape speed information 105 from the servo control circuit 5, the tape speed can also be obtained from transition in time code contained in the analog signals or digital signals reproduced from the tape.

Furthermore, switching of the audio output switching circuit 3 from digital audio reproduction signal to analog audio reproduction signal may be made not only by alternatively selecting either signal but also by mixing both signals and switching by continuously and gradually changing the mixing ratio from an extreme on one side of a 100% digital audio reproduction signal output to another extreme on the other side of a 100% analog audio reproduction signal output in an overlapping manner.

Exemplary Embodiment 2:

Fig. 3 is a block diagram of a key part of a digital audio reproduction circuit in a second exemplary embodiment of the present

invention. In Fig. 3, a digital audio reproduction circuit 2 includes a decode circuit 7 for decoding coded signals based on a special coding scheme for magnetic recording by inputting digital audio reproduction signals, an error correction circuit 8 for correcting errors in the output signal of the decode circuit 7, a digital audio decode circuit 9 for decompressing compressed digital output signals of the error correction circuit 8 or converting to analog signals, and an error and correction detection circuit 10 for detecting an error or state of error correction in the error correction circuit 8 and supplying the output to a microcomputer 4.

Now, operation of the present exemplary embodiment will be described below referring to Fig. 3. The digital audio reproduction signal reproduced by a head is decoded by the decode circuit 7, inputted to the error correction circuit 8, where errors are corrected by a known method, and converted to analog audio signal after compressed signal has been decompressed in the digital audio decode circuit 9. The number of syncs and error flags in the error correction circuit 8 are put out to the microcomputer 4 as error information 103.

In the event the microcomputer 4 detects in the error information 103 either that the number of syncs, namely, synchronization blocks in which audio data is grouped by the unit of blocks, is equal to or less than a predetermined number N per frame, or an error flag that it is too many to be corrected, judgment is made that there is digital audio reproduction error and the microcomputer 4 (or a control circuit having a like function) switches with a control signal 104 the audio output switching circuit 3 from digital audio reproduction signal to analog audio reproduction signal.

In this exemplary embodiment, as the number of syncs or existence of an error flag is used as error information 103 of the digital audio reproduction circuit in this way, when reproduction

error has occurred due to some tape damage and the like, switching is made to analog audio, thus preventing generation of large noises during reproduction.

Exemplary Embodiment 3:

Fig. 4 is a block diagram of a digital audio output control circuit in a third exemplary embodiment of the present invention. In Fig. 4, the points of difference from Fig. 1 of the first and the second exemplary embodiments are that a delay circuit 11 for delaying analog signal is provided between the analog audio reproduction circuit 1 and the audio output switching circuit 3, and that the microcomputer 4 receives information on tape playback position from reproduction head and tape speed information 105 from the servo control circuit 5, and supplies delay time information 108 to the delay circuit. The other parts are the same as in Fig. 1 and description is simplified by assigning the same numerals.

The structure is as described above. A description on the operation will now be made below. Digital audio signals are caused to have a slight delay from analog signals as digital audio signals are encoded when recording and decoded when reproducing. At normal speed, encoding or decoding causes a delay of 2 to 3 frames, for example, compared with the analog audio signal, which is equivalent to approximately 60 to 100 milliseconds. This delay is doubled by recording and reproduction. When the tape is run at higher than the normal speed during reproduction, the time difference relative to analog audio is further increased by tape transport during decoding, causing discontinuity in reproduced contents when switched. This exemplary embodiment addresses this discontinuity. On receiving tape speed information 105, the microcomputer 4 first puts out delay time information 108 in a manner such that the delay time is made greater as the tape speed increases and controls the delay time of the delay circuit 11. Because of this, when the audio output

switching circuit is switched by the previously mentioned control signal 104 from an output of the digital audio reproduction circuit to an output from the analog audio reproduction circuit, timing of the two reproduction signals are in agreement thus not causing discontinuity in the reproduced sound.

In this case, too, tape speed information may be obtained from transition per unit time of tape position information (time code) 109 as reproduced from the tape instead of the tape speed information 105 from the servo control circuit 5.

Industrial Applicability:

The audio output control device in accordance with the present invention provides an advantageous effect of enabling monitoring by means of audio reproduction signals under any conditions, by switching to reproduction output of analog audio reproduction signals even under a condition in which digital audio reproduction signals cannot be reproduced. The same effect can be obtained by switching by continuously and gradually changing from digital audio reproduction signal output to analog audio reproduction signal output in an overlapping manner.

Also, in a configuration in which a delay circuit is provided between the analog audio reproduction circuit and the audio output switching circuit for delaying analog signals, an advantageous effect of preventing reproduced sound from becoming discontinuous associated with switching especially after the tape speed has increased is obtained.

What is claimed is:

1. An audio output control device comprising digital audio signal reproduction means for reproducing digital audio signals, analog audio signal reproduction means for reproducing analog audio signals, and audio output switching means for switching between output signals of said digital audio signal reproduction means and output signals of said analog audio signal reproduction means.

2. The audio output control device of claim 1 further comprising a microcomputer, wherein said microcomputer controls said audio output switching means.

3. The audio output control device of claim 1, wherein control of said audio output switching means is performed by a circuit structure other than a microcomputer.

4. The audio output control device of claim 1, wherein said audio output switching means performs switching by inputting output signals of said digital audio signal reproduction means and output signals of said analog audio signal reproduction means, mixing both of them, and continuously and gradually changing the mixing ratio thereof.

5. The audio output control device of claim 1, wherein control of said audio output switching means is performed based on VTR tape speed information.

6. The audio output control device of claim 1, wherein control of said audio output switching means is performed based on reproduction error information of digital audio signals or on VTR tape speed information.

7. The audio output control device of claim 1, wherein a delay circuit is provided between said analog audio signal reproduction means and said audio output switching means, and the delay time of said delay circuit is controlled based on VTR tape speed information.

8. The audio output control device of claim 5, wherein said tape

speed information is obtained from a time code reproduced from tape or from a servo control circuit.

9. The audio output control device of claim 6, wherein said tape speed information is obtained from a time code reproduced from tape or from a servo control circuit.

10. The audio output control device of claim 7, wherein said tape speed information is obtained from a time code reproduced from tape or from a servo control circuit.

11. The audio output control device of claim 6, wherein said reproduction error information is that the number of syncs per frame is equal to or less than a predetermined value, or existence of an error flag.

Fig. 1

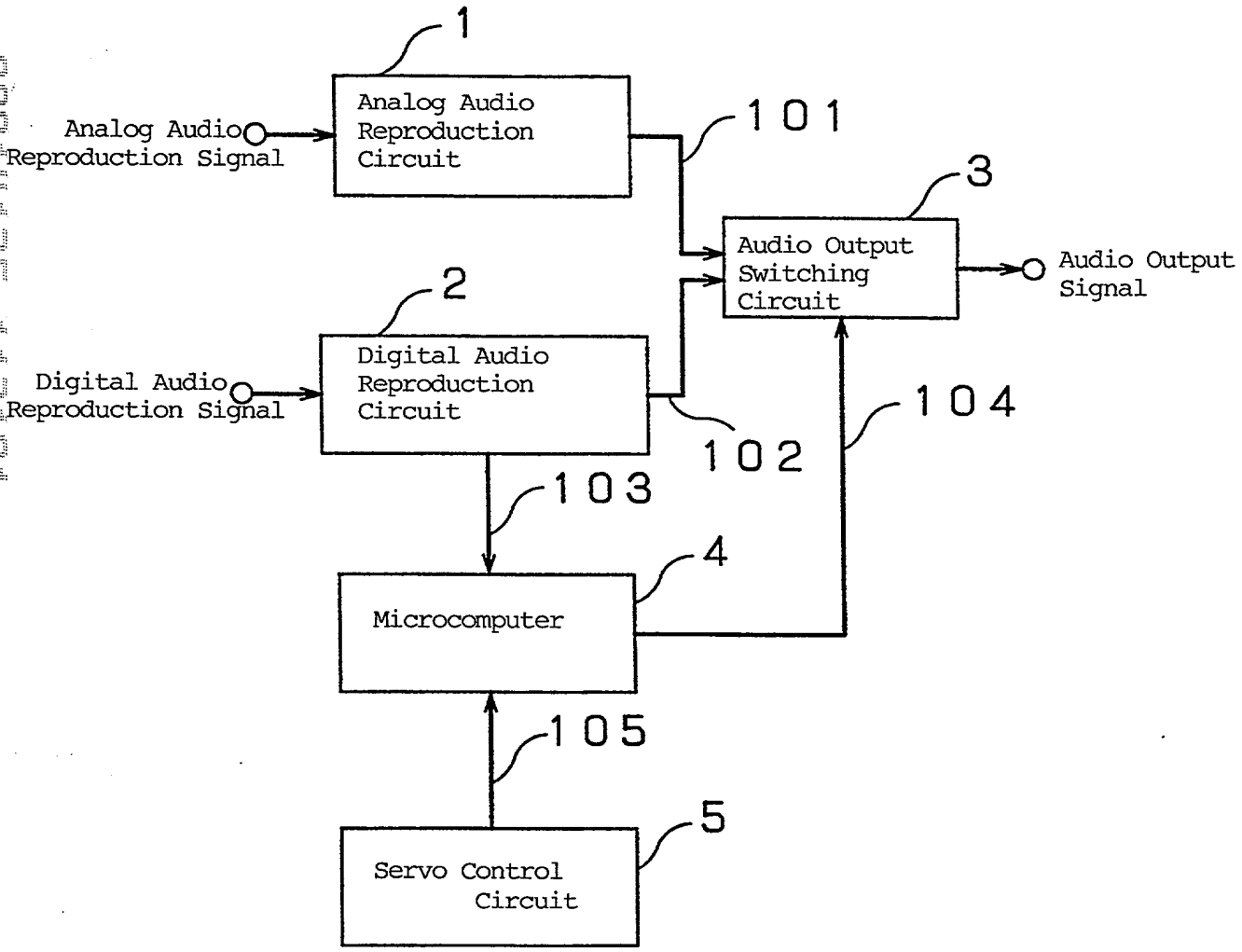

1
Analog Audio Reproduction Signal
Analog Audio Reproduction Circuit
101
3
Audio Output Switching Circuit
Audio Output Signal
2
Digital Audio Reproduction Signal
Digital Audio Reproduction Circuit
102
104
103
4
Microcomputer
105
5
Servo Control Circuit

Fig. 2

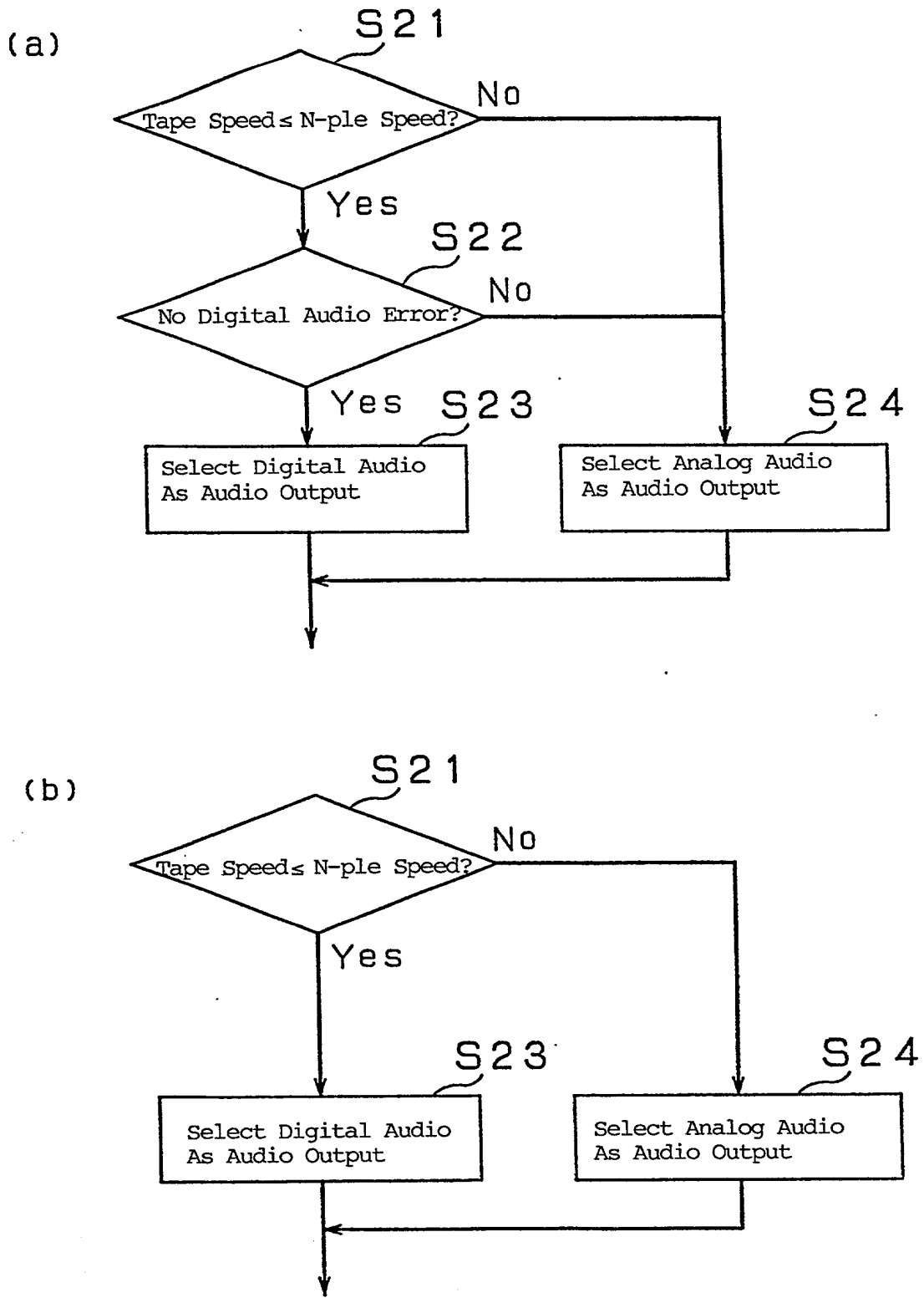

(a)
S21
Tape Speed≤ N-ple Speed?
No
Yes
S22
No Digital Audio Error?
No
Yes
S23
Select Digital Audio As Audio Output
S24
Select Analog Audio As Audio Output
(b)
S21
Tape Speed≤ N-ple Speed?
No
Yes
S23
Select Digital Audio As Audio Output
S24
Select Analog Audio As Audio Output

Fig. 3

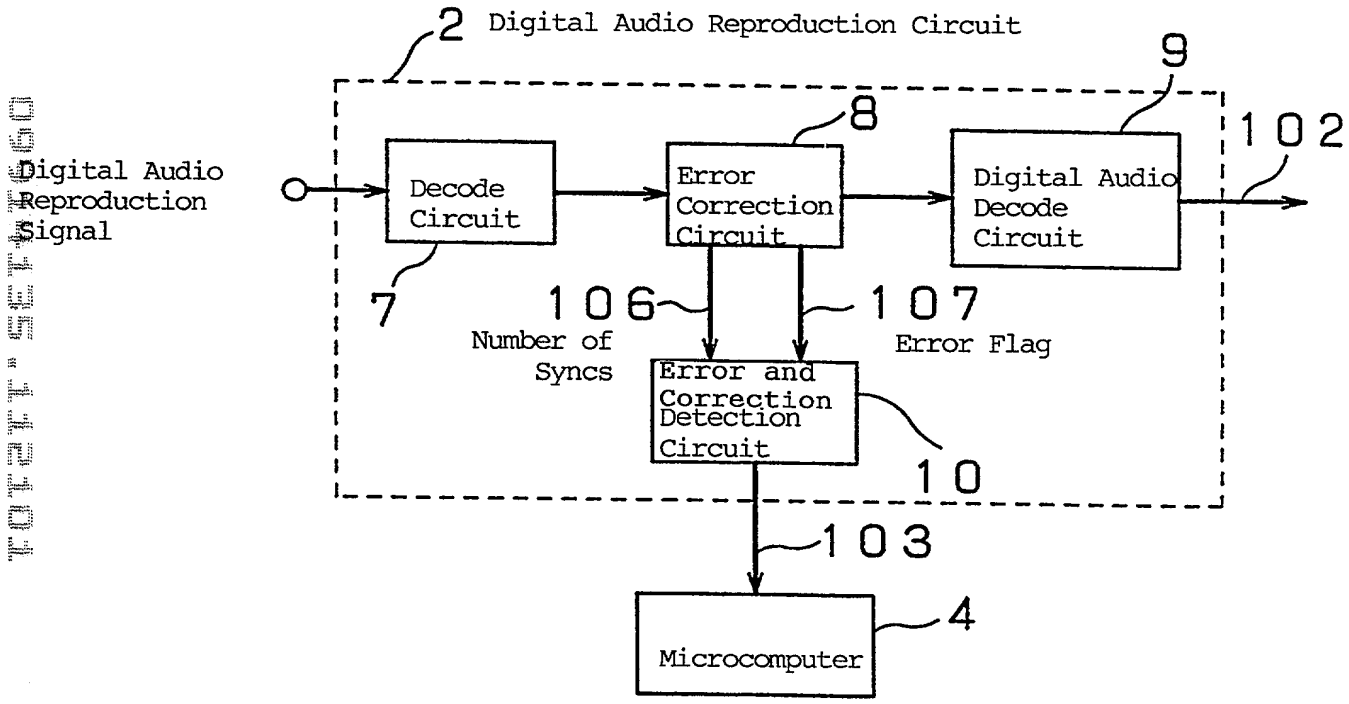


Fig. 4

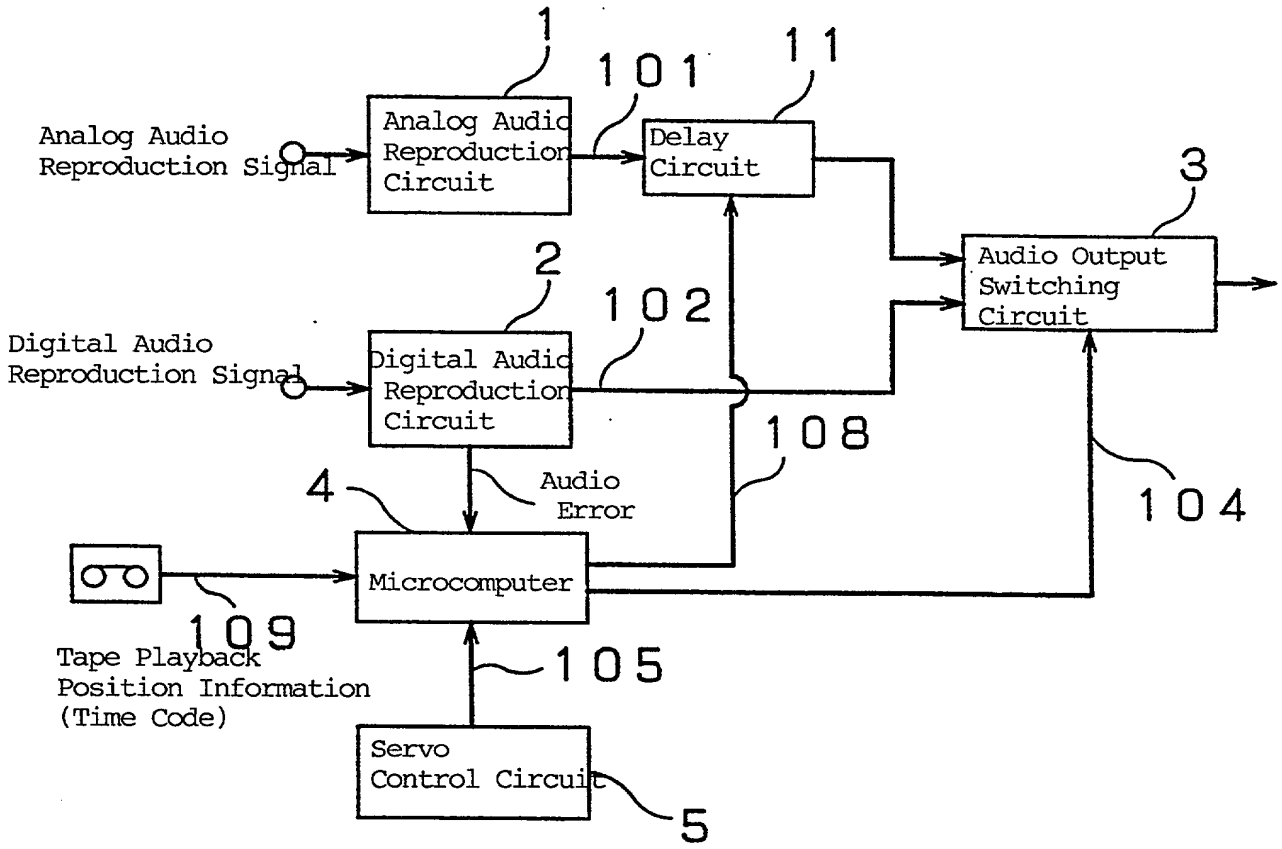

1
101
11
Analog Audio
Reproduction Signal
Analog Audio
Reproduction
Circuit
Delay
Circuit
3
Audio Output
Switching
Circuit
2
102
Digital Audio
Reproduction Signal
Digital Audio
Reproduction
Circuit
108
4
Audio
Error
104
Microcomputer
109
Tape Playback
Position Information
(Time Code)
105
Servo
Control Circuit
5

Fig. 5

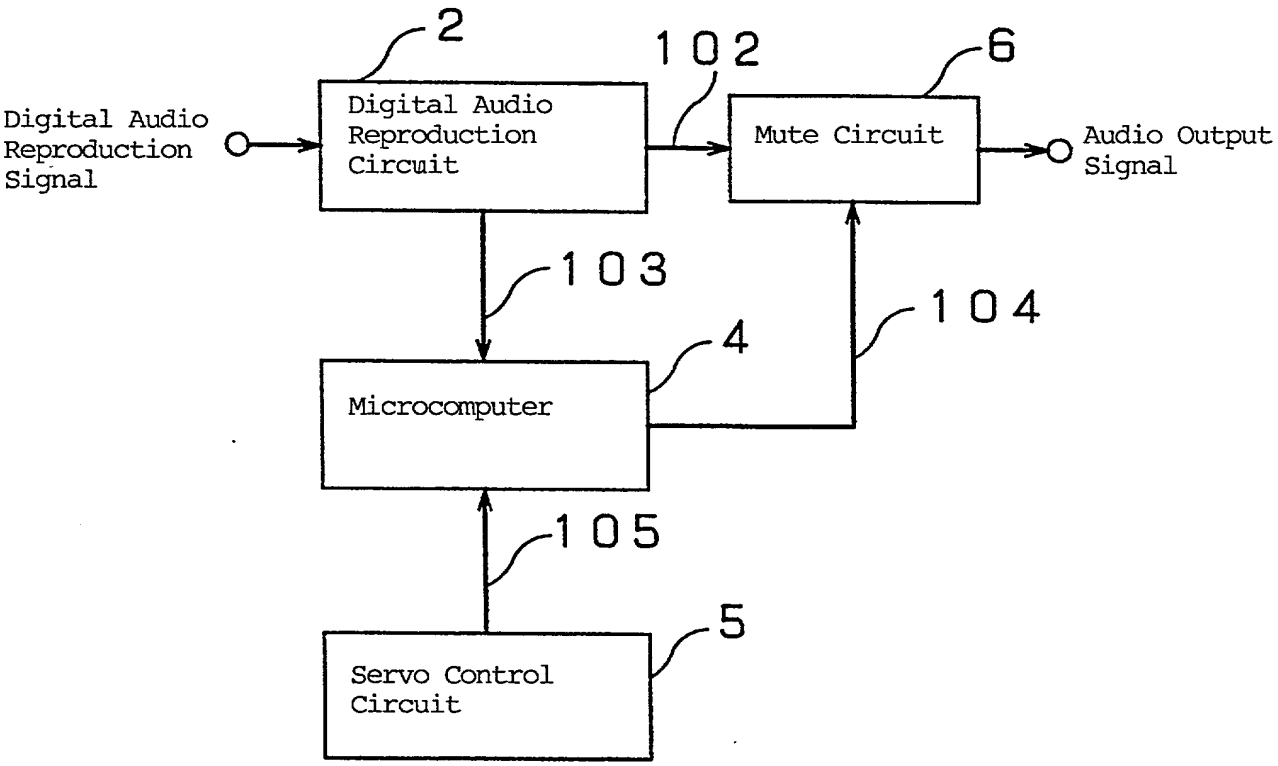
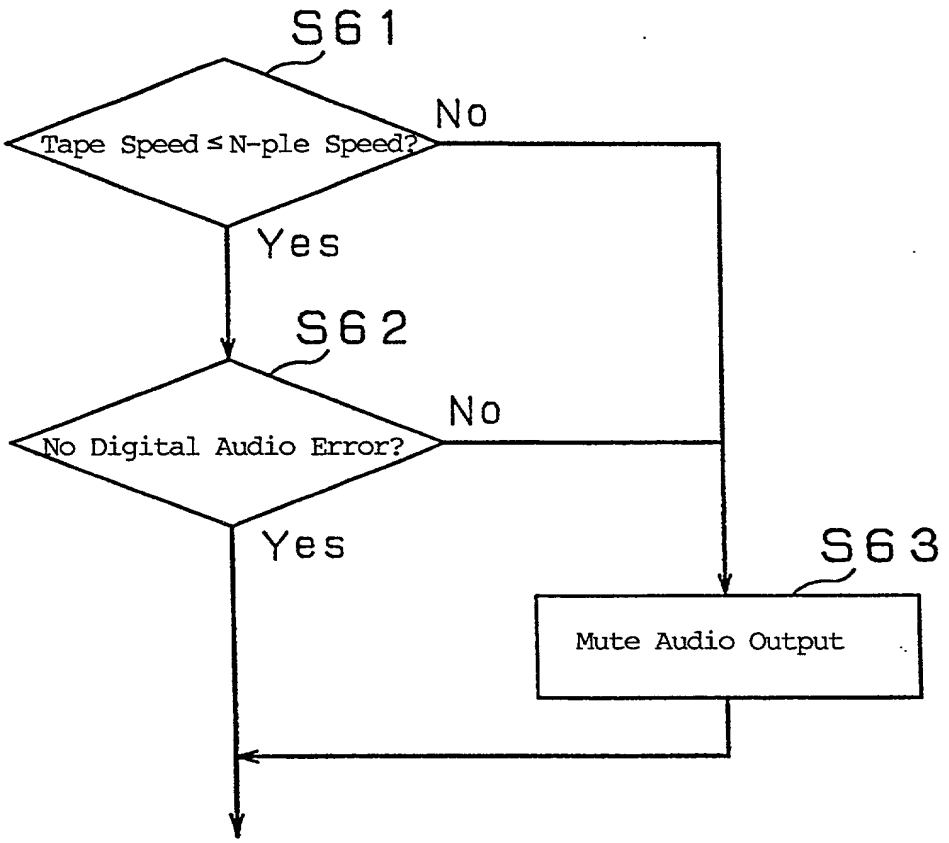


Fig. 6


S61
Tape Speed ≤ N-ple Speed?
No
Yes
S62
No Digital Audio Error?
No
Yes
S63
Mute Audio Output

List of reference numerals:

1. Analog audio reproduction circuit
2. Digital audio reproduction circuit
3. Audio output switching circuit
4. Microcomputer
5. Servo control circuit
6. Mute circuit
7. Decode circuit
8. Error correction circuit
9. Digital audio decode circuit
10. Error and correction detection circuit
11. Delay circuit
101. Analog audio reproduction circuit
102. Digital audio reproduction circuit
103. Error information
104. Control signal
105. Tape speed information
106. Number of syncs
107. Error flag
108. Delay time information
109. Tape position information
S21. Steps of tape speed judgment
S22. Steps of error existence judgment
S23. Steps of digital audio selection
S24. Steps of analog audio selection
S61. Steps of tape speed judgment
S62. Steps of error existence judgment
S63. Steps of audio output muting

P22175

Rev. 3-21-01

Effective March 1998

DECLARATION AND POWER OF ATTORNEY FOR U.S. PATENT APPLICATION

(X) Original () Supplemental () Substitute () PCT () DESIGN

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title: AUDIO OUTPUT CONTROL DEVICE

of which is described and claimed in:
() the attached specification, or
() the specification in application Serial No. 09/914,135, filed August 23, 2001, and with amendments through the Preliminary Amendment filed August 23, 2001
(X) the specification in International Application No. PCT/JP00/00962, filed February 21, 2000, and as amended on _(if applicable).

I hereby state that I have reviewed and understand the content of the above-identified specification, including the claims, as amended by any amendment(s) referred to above.

I acknowledge my duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim priority benefits under Title 35, United States Code, §119 (and §172 if this application is for a Design) of any application(s) for patent or inventor's certificate listed below and have also identified below any application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NO.	DATE OF FILING	PRIORITY CLAIMED
Japan	11-047614	February 25, 1999	YES

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION SERIAL NO.	U.S. FILING DATE	STATUS: PATENTED, PENDING, ABANDONED

And I hereby appoint Michael R. Davis, Reg. No. 25,134; Matthew M. Jacob, Reg. No. 25,154; Warren M. Cheek, Jr., Reg. No. 33,367; Nils Pedersen, Reg. No. 33,145; Charles R. Watts, Reg. No. 33,142; and Michael S. Huppert, Reg. No. 40,268, who together constitute the firm of WENDEROTH, LIND & PONACK, L.L.P., as well as any other attorneys and agents associated with Customer No. 000513, to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith.

I hereby authorize the U.S. attorneys and agents named herein to accept and follow instructions from Matsushita Electric Industrial Services Co., Ltd. as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and myself. In the event of a change in the persons from whom instructions may be taken, the U.S. attorneys named herein will be so notified by me.

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I further declare that all statements made herein of my own knowledge are true, and that all statements on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

1st Inventor Toshiyuki Hagihara Date October 31, 2001
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5th Inventor ____________________ Date ____________

6th Inventor ____________________ Date ____________

The above application may be more particularly identified as follows:

U.S. Application Serial No. 09/914,135 Filing Date August 23, 2001

Applicant Reference Number P22175-01 (I.S. Matsu) Atty Docket No. 2001_1126A

Title of Invention AUDIO OUTPUT CONTROL DEVICE